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Rhodora

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Conducted and published for the Club, by

MERRITT LYNDON FERNALD, Editor-in-Chief

JAMES FRANKLIN COLLINS
CHARLES ALFRED WEATHERBY } Associate Editors
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Vol. 35. December, 1933. No. 420.

NOTES FROM THE HERBARIUM OF THE UNIVERSITY OF WISCONSIN—X[1]

Norman C. Fassett

That part of Ontario between the Ottawa River and Sault Ste. Marie, including the north shore of Lake Huron and the vicinity of Georgian Bay, seems to have been botanized less extensively than its interesting flora would warrant. The following rather disjointed notes are the results of several trips by automobile, when it was seldom possible to collect at any great distance from the highways. The writer is indebted to the late Dr. M. O. Malte for much information concerning the known ranges of these plants in Canada, and especially to Mr. C. A. Weatherby for his kindly help in identifying much of the material.

Twelve miles east of Sault Ste. Marie the highway skirts for some distance a long, south-facing cliff, with well-developed talus. On this cliff, near Garden River, was collected *Woodsia Cathcartiana*, while in near-by woods was found *Osmorhiza divaricata*. The latter proves to be a not uncommon species in the upper Great Lakes area, having been found by the writer at Port Wing, Wisconsin, in great profusion in the Porcupine Mountains near Ontonagon, Michigan, on Manitoulin Island and on Bruce Peninsula.

The many small lakes between Sault Ste. Marie and Espanola are mostly rocky-shored, with small sandy beaches. Many of the plants are obviously of eastern derivation; these include *Elatine minima*, *Juncus pelocarpus* and *Eriocaulon septangulare*.

[1] Published with aid of a grant to Rhodora from the National Academy of Sciences.

Manitoulin Island may be approached from the north by a road from Espanola, which traverses a rugged and barren region of igneous and metamorphic rocks—"rough, tough and terrible," to quote a resident. Coincident with reaching the Lake Huron shore, on Cloche Peninsula, the highway abruptly emerges on a level limestone plain. There are but a few decimeters of soil, or in many places no soil at all, with vegetation occurring only in crevices in the rock. Here, on the dry barrens or margins of pools, are such characteristic plants of the Great Lakes as *Eleocharis pauciflora*, *Rynchospora capillacea* var. *leviseta*, *Hypericum Kalmianum*, *Primula intercedens*, and *Sisyrinchium montanum*. Here, with the Arctic *Carex scirpoidea*, are several plants apparently not hitherto reported from so far north in Ontario: *Geum triflorum*, *Linum sulcatum*, *Rhus canadensis*, and *Liatris cylindracea* (also reported from La Cloche Island).[1] Here was collected a mint which may be described as:

ISANTHUS BRACHIATUS (L.) BSP., var. **linearis**, n. var., caule simplice, 7–10 cm. alto, gracillimo; foliis superioribus linearibus, 1–1.7 mm. latis, 1-nerviis; calicibus minus glandulosis quam apud formam typicam, florentibus 3 mm. longis, fructiferis 4 mm. longis; bracteolis calycibus proximis.—Stem simple, 7–10 cm. high, very slender; upper leaves linear, 1–1.7 mm. wide, 1-nerved; lower leaves unknown; calyx less glandular than in the typical form, 3 mm. long in flower, 4 mm. in fruit; floral bracts closely subtending the calyx.—Dry limestone flats, Cloche Peninsula, Ontario, August 20, 1932, *N. C. Fassett*, no. 14770 (TYPE in Herb. Univ. of Wis.).

In aspect this little plant scarcely suggests *Isanthus brachiatus*, but its floral structure indicates that it is but a dwarfed northern extreme of that species.

In a lake on Great Cloche Island was found a plant differing from *Potamogeton Robbinsii* in lacking the ordinarily very characteristic minute serrulation of the leaves; its uniform occurrence in certain localities would indicate that it is more than a sporadic abnormality. It was found by two different collectors in different years in one lake in Wisconsin. The writer collected it at Mattawa, Ontario, in 1931, and in 1932 found it abundant at the same locality, although not *in situ*, for the water was high and only floating plants were collected. Besides occurring on Great Cloche Island, it has been collected on Cockburn Island, also in northern Lake Huron. The indication is that it replaces typical *P. Robbinsii* on many of these places, but, on the other hand, both types have been collected in Lake Maxinkuckee,

[1] Macoun, Cat. Can. Pl. ii. 207 (1884).

Indiana. The only real intermediate seen is from Togue Pond, near Mt. Katahdin, Maine, collected by A. H. Norton on July 28, 1923; this has some of the leaves serrulate and some entire. Many specimens which at first appear to have entire leaves prove otherwise when examined with transmitted light under a binocular microscope.

Potamogeton Robbinsii Oakes, f. **cultellatus**, n. f., marginibus foliorum non serratis, firmis, stramineis, nitentibus.—Wisconsin: Bond Lake, Gordon, September 14, 1930, *W. T. McLaughlin*, no. 13081; Bond Lake, Gordon, July 9, 1931, *J. H. Steenis*, no. 1369. Michigan: Liver Light Lakes, Iron County, September, 1922, *F. P. Metcalf*, no. 2232.[1] Indiana: Lake Maxinkuckee, 1904, *J. T. Scovell*, no. 29.[2, 2] Ohio: Sandusky Bay ["Sand Bay" on the label; Dr. Pieters writes me that this was an abbreviation for Sandusky Bay], August 31, 1898, *A. J. Pieters*.[2] Ontario: Cockburn Island, Lake Huron, *J. Bell* in 1860;[3] shallow water of Helen Lake (or Lewis Lake), Great Cloche Island, August 20, 1932, *N. C. Fassett*, no. 14806 (type in Herb. Univ. of Wis.); shallow water, Mattawa, July 4, 1931, *Fassett*, no. 13325; floating in the Mattawa River, Mattawa, September 9, 1932, *Fassett*, no. 14805. Connecticut: Hamlen's Pond, Plainville, July 29, 1901, *C. H. Bissell.*

Manitoulin Island, in the northern part of Lake Huron, is 80 miles long, and has on it many small shallow lakes. The most conspicuous topographic feature is a limestone cliff along the northern side; this is the escarpment of the Niagara limestone, which also makes up the backbone of Door County, Wisconsin, and of the Bruce Peninsula, Ontario. This escarpment appears like a promising territory for a botanist, but fires have been so devastating that most of the cliffs and talus slopes have become too dry to support much vegetation. A collector who could take the time to find moist sheltered places would probably discover much of interest. Visiting a talus slope near High Hill, Excelsior, on August 21, 1932, the writer collected a *Woodsia* of the puzzling *oregana* group, which superficially resembled *W. Cathcartiana*, but differed from that species in having the margins of the pinnules jagged and glandular; in this it matched a specimen of *W. mexicana* collected by Wooton & Standley, in the White Mountains, Lincoln County, New Mexico, August 25, 1907.

On the Lake Huron shore, about eight miles west of Little Current, on Manitoulin Island, was collected *Bidens frondosa* var. *anomala*,

[1] Specimen in the United States National Herbarium; the writer is indebted to Dr. Maxon for the loan, and to Mr. Neil Hotchkiss for examining and selecting this material.

[2] Specimen in the Gray Herbarium, the writer is indebted to Professor Fernald and Mr. Weatherby for selecting and loaning this material.

new to Ontario and apparently not previously known from the shores of the Great Lakes except at the eastern end of Lake Ontario.

Bruce Peninsula has long been known as the home of some remarkable plants.[1] Here, as on Manitoulin Island, fire has done much damage. On a cool damp cliff at Barrow Bay the writer collected *Draba cana,* new to Ontario and not recorded in Gray's Manual as occurring between Vermont and the Rocky Mountains, while in moist woods near-by was found *Epilobium paniculatum,* which has been reported by Macoun from Bruce Peninsula. On talus slopes and stony beaches *Geranium Robertianum* is perhaps the most abundant plant. *Arenaria serpyllifolia* is so universally present on the escarpment of the Niagara limestone, is in such undisturbed habitats and in company with so many native species that it is hard to believe that it is an adventitious plant. It has been collected by the writer on the escarpment at the following places: Fish Creek, Wisconsin, in company with a *Draba* as yet unidentified; Pickford, Michigan, with *Asplenium viride* and *Polystichum Lonchitis;* near High Hill, Excelsior, Manitoulin Island, with the *Woodsia* just mentioned; Barrow Bay, Bruce Peninsula, with *Draba cana.*

Lake Nipissing is 50 miles northeast of Georgian Bay, and lies in the channel of one of the outlets of the Algonquin Great Lakes. Here were found two plants of some interest.

Lathyrus japonicus Willd., var. **parviflorus,** n. var., caulibus gracilibus, glabris vel pilosis in angulis; floribus 12–14.5 mm. longis; calicibus 7–8 mm. longis; leguminibus 3.8–4.8 cm. longis, chartaceis; seminibus 3.5–4 mm. diametro.—Ontario: sandy shore of Lake Nipissing, North Bay, July 3, 1931, *N. C. Fassett,* no. 13485 (type in Herb. Univ. of Wis.); same station, plant with mature pods, September 10, 1932, *Fassett,* no. 14768; Lighthouse Point, on the southeast shore of Lake Nipissing, September 10, 1932, *Fassett,* no. 12952; Waltonian Lodge, on the southeast shore of Lake Nipissing, September 10, 1932, *Fassett,* no. 14769.

This beach pea, apparently isolated on the shores of Lake Nipissing since the time when that lake was a part of the outlet of the glacial Great Lakes, is slightly more slender than are the common plants of marine and Great Lakes beaches, has a much smaller flower, and a legume with much thinner and more papery walls. Moreover, the fruits and seeds at their largest development scarcely equal the smallest to be found on the more widespread varieties. In the type collec-

[1] See Mem. Am. Acad. Arts & Sci. xv. 256 (1925).

tion the flowers are nearly white, but the plants collected at the same station fourteen months later show normally colored flowers.

The pubescent variety of beach pea (*L. japonicus* var. *pellitus*), so abundant on the north Atlantic coast, is but sparsely represented about the Great Lakes, there being no material in the Gray Herbarium from inland stations.[1] Of the 42 sheets of *L. japonicus* from the Great Lakes region in the Herbarium of the University of Wisconsin, but two can be definitely referred to var. *pellitus;* these are: Washington Island, Door County, Wisconsin, July 22, 1926, *A. M. Fuller,* no. 1522; Manistique, Michigan, July 1, 1931, *N. C. Fassett,* no. 13482.

The recent changes in the nomenclature of the beach pea are here followed, although the writer is of the opinion that *Lathyrus japonicus* vs. *L. maritimus,* following *Quercus borealis* vs. *Q. rubra, Juncus macer* vs. *J. tenuis, Solidago flexuosa* vs. *S. latifolia,* and *Acer Treleaseanum* vs. *A. saccharum,* should be the last straw on the back of the last objector to the conservation of specific names.

Bidens connata Muhl., var. **submutica,** n. var., aristis nullis vel rare 1–2, 0.25–1.00 mm. longis; foliis simplicibus, petiolatis, dentibus var. *petiolatam* vel var. *ambiversam* simulantibus.—Awns none or rarely 1–2 in number and 0.25–1.00 mm. long; leaves simple, petioled, toothed as in var. *petiolata* or as in var. *ambiversa.*—Ontario: sandy shore of Lake Nipissing, North Bay, September 10, 1932, *Fassett,* no. 14775 (type in Herb. Univ. of Wis.); near Waltonian Lodge, southeast shore of Lake Nipissing, September 10, 1932, *Fassett,* nos. 14800, 14801, and 14802.

At Galetta, about 25 miles above Ottawa, the "Mississippi River" enters the Ottawa River. On the shore of the small stream, close to the highway, were collected *Typha angustifolia,* of which Dr. Malte wrote me that he had seen no specimens from above the Ottawa district, and *Juncus compressus,* of which he wrote me that he had seen no material from the Province of Ontario.

Madison, Wisconsin.

On Polysiphonia fibrillosa in New England.—It is well known that this species is common south of Cape Cod. But, when Farlow's *Marine Algae of New England* appeared in 1881, only one specimen of this alga had ever been found north of that famous barrier of marine life. This had been collected by Hooper at Lynn,

[1] Rhodora xxxiv. 184 (1932).

Massachusetts about the middle of the 19th century.[1] This was still the only record in 1900.[2] But after Collins had spent several years in the study of the algae of Casco Bay, Maine he discovered it in Quahaug Bay.[3]

On several occasions I have found it here in sterile and depauperate forms. But on June 20, 1933, I collected fruited specimens in a sunny and protected bay, on *Zostera*. This is probably almost, if not quite, its eastern limit in the United States. South of the Cape it reaches a height of four to ten inches. Here most of the plants are but a few millimeters tall. The male plants especially are small and bear but one or two antheridia, and the female plants develop few or imperfect cystocarps. Every consideration indicates that this species was not evolved in our waters, but came to us from the Northeast Atlantic, where it abounds along the British Isles and western Europe.

One wonders whether it reached us during the mild climate of the Cretaceous, before the northern land bridge broke through in the Tertiary and allowed the cold waters of the Arctic Ocean to mingle with the waters of the north Atlantic and dominate its flora and climate. If so, why has it remained unchanged on each side of the Atlantic? Or, have there been subsequent migrations which have kept it true to type, despite the cold waters and other adverse influences encountered on the journey?

A slide has been placed in the National Herbarium.—R. E. Schuh, Brooklin, Maine.

THE TYPE OF TEUCRIUM CANADENSE[1]

M. L. Fernald

In 1901 the late Eugene P. Bicknell, one of the most observant of American amateurs, published his study of "The Genus Teucrium in the Eastern United States."[4] Bicknell there interpreted *Teucrium canadense* L. as the comparatively southern and inland plant with the "leaves rather thin, ovate to ovate-oblong or narrower, rounded or rarely subcordate at base, . . . 2.5–5 cm. wide, . . . above green and thinly appressed-hirsutulous to glabrate," a plant ranging

[1] W. H. Harvey, Nereis Boreali-Americana, Vol. II., p. 43. Washington, 1852.
[2] F. S. Collins, Rhodora, vol. 2, p. 51, Feb., 1900.
[3] F. S. Collins, Marine Algae of Casco Bay, p. 279, 1911. In Proceedings of Portland Society of Natural History. Vol. II., Part 9.
[4] Bicknell, Bull. Torr. Bot. Cl. xxviii. 166–172 (1901).

from "Western New England to Georgia and southern Texas, west to Arkansas."

At the same time he published as a new species, *T. littorale* Bickn. Bull. Torr. Bot. Cl. xxviii. 169 (1901), with "leaves thickish and rugose-veiny, narrowly oblong or sometimes broader, narrowed into the petiole, . . . 1.5–4 cm. wide," a coastal plant ranging from "Maine to Florida" and now well known from the coast of eastern Canada (Nova Scotia[1] and eastern New Brunswick[2]).

Subsequently I felt that, although well defined geographic or ecological varieties, the two plants described by Bicknell are hardly specifically separable and I, consequently, published the combination *T. canadense*, var. *littorale* (Bickn.) Fernald, Rhodora, x. 84 (1908). More recently, however, in view of the fact that the narrow- and rugose-leaved coastwise plant extends along the sandy outer coast of eastern Canada, a region whence specimens of many plants reached Europe in pre-Linnean times, it has seemed unlikely that Linnaeus had before him from "Canada" the plant which scarcely reaches so far north. The Linnean description of the plant he actually studied and clearly intended as *T. canadense* certainly applies to the coastwise plant, with its narrow leaves ("*Foliis gaudet angustioribus*"—Linnaeus) "rugose-veiny"—Bicknell ("*rugosis*"—Linnaeus). Bicknell, however, made a different decision, maintaining that Linnaeus rested the species primarily upon a reference to Tournefort, which Bicknell interpreted as referring to the plant of the interior with broad and thin non-rugose leaves.

In view of this difference of interpretation, it is important to have the Linnean account before us.

canadense 15. TEUCRIUM foliis ovato-lanceolatis serratis, caule erecto, racemo terminali, verticillis hexaphyllis.
Teucrium foliis lanceolatis serratis petiolatis, floribus solitariis. *Gron. virg.* 64.?
Chamaedrys canadensis, urticae folio subtus incano. *Tournef. inst.* 205.
Habitat in Canada. ♃
Planta *e* Canada *Foliis gaudet angustioribus, aequaliter serratis, subtus tomentosis, planis; Spica ex verticillis aut sparsis floribus bractea minima singulis subjecta; at* Hortensis *Foliis majoribus rugosis, inaequaliter serratis, vix subtus pubescentibus &* Floribus *in* Racemum *subspicatum ex verticillis sexfloris, hexaphyllis: bracteis serratis.*[3]

[1] Fernald, Rhodora, xxiii. 289 (1922).
[2] Blake, Rhodora, xx. 106 (1918).
[3] L. Sp. Pl. ii. 564 (1753).

It is at once apparent that *T. canadense* rested upon a very full and original account of a plant studied by Linnaeus and seen by him in cultivation, a plant with "*Foliis angustioribus* [*i. e.* with leaves narrower than in the preceding species, *T. sibiricum* "foliis . . . ovatis"] . . . *majoribus rugosis*" and references to earlier writers whose species Linnaeus associated with his own: *Teucrium foliis lanceolatis* of Gronovius, about which Linnaeus expressed doubt; and the *Chamaedrys canadensis* of Tournefort, about which we know nothing more than the brief and quite indecisive phrase of Tournefort, fully quoted by Linnaeus.

In such a case as this, with Linnaeus clearly describing a plant which he personally studied, most taxonomists would not hesitate to accept the plant Linnaeus had before him as the type. This plant, preserved in the Linnean Herbarium at Burlington House, was studied in 1930 by Mr. Bayard Long and myself. It is the most typical form of *T. littorale* Bicknell. When Bicknell was studying the group the late Professor L. M. Underwood looked up at the British Museum the Gronovian plant which was doubtfully included by Linnaeus. That, too, was *T. littorale*, Bicknell reporting upon it as follows: "The specimen doubtfully cited by Linnaeus under his *T. Canadense* was, however, brought to light at the British Museum. It proved to be 'wholly unsatisfactory' and was regarded both by Mr. Britten [James Britten, then Keeper of the British Museum] and Professor Underwood as a pathological plant. However, from the careful notes and sketches of the leaves made by Professor Underwood I have little doubt that the specimen is actually our common coastwise plant."[1]

Bicknell, however, felt that the two plants which Linnaeus had himself studied were wholly secondary: the plant which he fully described and which rests in his herbarium; and the Clayton plant of Gronovius, which Linnaeus had previously studied. Consequently, he interpreted the Linnean species as resting primarily on the Tournefort reference, which Bicknell justly characterized as "unsatisfactory." If, however, we interpret the Linnean species, not by the plants he knew and studied, but, rather, by those he did not know, our interpretations must be, as Bicknell called his own interpretation in this case "not wholly free from uncertainty." As already stated, most botanists would interpret the Linnean *T. canadense* as the plant Linnaeus twice studied, the plant of eastern Canada which Bicknell called *T. littorale*.

[1] Bicknell, l. c. 167 (1901).

A most significant point in this connection is the fact that, immediately following his *Teucrium canadense* "*Foliis gaudet angustioribus . . . rugosis,*" Linnaeus had a second species, *T. virginicum* "foliis ovatis," based on another of Clayton's specimens which Linnaeus had personally studied. This type of *T. virginicum* could not be found by Underwood but Bicknell's conclusion seems justified, that the description "allows scarcely a doubt" that it was the inland plant interpreted by Bicknell as *T. canadense*. Linnaeus would hardly have distinguished as two species (1) *T. canadense,* "*Foliis . . . angustioribus . . . rugosis*" from Canada, where the narrow- and rugose-leaved plant is well known and where the ovate-leaved plant is unknown, and (2) *T. virginicum* "foliis ovatis," if his *T. canadense* had had the leaves ovate. It is reasonably clear, then, that

Teucrium canadense L. Sp. Pl. ii. 564 (1753), as to plant described (supported by the type in the Linnean Herbarium) and as to the Gronovian plant (preserved in the Clayton Herbarium at the British Museum) is *T. littorale* Bicknell, Bull. Torr. Bot. Cl. xxviii. 169 (1901). *T. canadense,* var. *littorale* (Bickn.) Fernald, Rhodora, xxiii. 289 (1922).

The more southern and inland plant is

T. canadense L., var. virginicum (L.) Eaton, Man. Bot. ed. 5: 415 (1829); Wood, Class-Bk. 285 (1845); Farwell, Papers Mich. Acad. Sci. i. 97 (1923). *T. virginicum* L. Sp. Pl. ii. 564 (1753). *T. canadense* Bicknell, Bull. Torr. Bot. Cl. xxviii. 168 (1901), not L. (1753).

RECENT DISCOVERIES IN THE NEWFOUNDLAND FLORA

M. L. Fernald

(*Concluded from page 386*)

Additional Notes

While the preceding eleven instalments have been in the course of publication my attention has been called to necessary changes in nomenclature. Such as have come to attention follow, although it will doubtless be found that some earlier homonyms besides those already detected will necessitate further change. That is the inevitable result of the adoption of the "homonym rule" without any safeguarding.

Carex incurva Lightf. On pages 56, 60 and 216 I made notes on *C. incurva* Lightf. (1777) and its var. *setina* Christ (1888), publishing

a map (MAP 4) of the range and a photograph (PLATE 247, FIG. 1) of the latter. Most unfortunately, however, strict priority in nomenclature forces us to abandon the perfectly familiar name *C. incurva* for a characteristic and notable species of bipolar distribution and to take up for it a name, *C. maritima*, which has been equally familiar as the apellation of one of the most definite species of a wholly different section of the genus.

Carex maritima Gunner, Fl. Norveg. ii. 131 (1772), not *C. maritima* O. F. Muell., Fl. Dan. iv. fasc. xii. 6, t. dcciii (1777), was briefly but clearly diagnosed and based on an earlier diagnosis and excellent analytical plate:

> CAREX (*maritima*) spica unica, subrotunda; glumis ovatis, brevissime aristatis. *Hall.* 1354? *Oed. dan.* VIII.
>
> Norv. *Fjaerestar*. Habitat in arena littorea norv. Oeder.

C. maritima Gunner, was, therefore, established chiefly on the species described, without binomial, and well illustrated by Oeder in Flora Danica, iii. fasc. viii. (pl. ccccxxxii):

> *Carex spica unica subrotunda, glumis ovatis, brevissime aristatis.* Hall. 1354?
>
> Locus. In arenosis maritimis Norvegiae.

Both Oeder and, after him, Gunner, thought that the seashore plant of Norway might be species no. 1354 of Haller, but both expressed doubt on that point. *C. maritima* Gunner must, therefore, rest upon the Norwegian plant actually illustrated. This is without question the later-described *C. incurva* Lightf.

The detection of the priority of *Carex maritima* Gunner (1772), a name not caught either in *Index Kewensis* or by Kükenthal, over *C. incurva* Lightf. (1777) and over the wholly different *C. maritima* O. F. Muell. (1777) was made by Kreczetowicz, who, in a study of *Carex incurva sensu Kuekenthal*,[1] correctly takes up *C. maritima* for *C. incurva* but, less correctly, it seems to me, splits *C. incurva*, upon characters which are not satisfactorily constant in the material before me, into several proposed species: *C. transmarina* V. Krecz. for the plant of Greenland, *C. orthocaula* V. Krecz. for that of the Bering sea area, *C. jucunda* V. Krecz. for that of Newfoundland, etc. *C. setina* (Christ) V. Krecz. is set up for the dwarf *C. incurva*, var. *setina* Christ; and Simmons's ecological state of *C. incurva*, with culms showing the inflation so frequent in submersed individuals of many species, *C. incurva* var. *inflata* Simmons, appears as a new species, *C.*

[1] V. Krecz. Bull. Jard. Bot. del'Acad. Sci. deL'Urss. xxx. 119–138 (1932).

psychroluta V. Krecz., without a single specific character stated and only the description of Simmons directly quoted: "rhizoma longum inter muscos in aqua libera natans, culmus erectus valde inflatus, spica subglobosa."

Although I find myself unable to follow Kreczetowicz in his oversplitting of *Carex maritima* and his specific segregation from the northern European plant of the material from Greenland, Newfoundland and other North American areas, there are some well-defined geographic varieties which, unfortunately, have to be called

Carex maritima Gunner, var. **setina** (Christ), comb. nov. *C. incurva*, var. *setina* Christ in Scheutz, Pl. Vasc. Jeniseens. 174 (1888)—Kongl. Svensk. Vet.-Akad. Handl. xxii. no. 10: 174 (1888). *C. setina* (Christ) V. Krecz. Bull. Jard. Bot. de l'Acad. Sci. de L'Urss, xxx. 136 (1932).

C. maritima, var. **melanocystis** (Desv.), comb. nov. *C. melanocystis* Desv. in Gay, Hist. Bot. Chile, vi. 203, t. 73, fig. 5 (1853). *C. incurva*, var. *melanocystis* (Desv.) Kükenth. in Engler, Pflanzenr. iv.[20] 114 (1909).

C. maritima, var. **misera** (Phil.), comb. nov. *C. misera* Phil. Florul. Atacam. 388 (1860). *C. melanocystis*, var. *misera* (Phil.) Kükenth. in Engler, Bot. Jahrb. xxvii. 499 (1899). *C. incurva*, var. *misera* (Phil.) Kükenth. in Engler, Pflanzenr. iv.[20] 114 (1909).

The coarse maritime species with spreading or pendulous pistillate spikes with very prolonged scales, *Carex maritima* O. F. Muell. Fl. Dan. iv. fasc. xii. 6, t. dcciii (1777), not Gunn. Fl. Norv. ii. 131 (1772), must, apparently, be called C. paleacea Wahlenb. Vet.-Akad. Nya Handl. Stockh. xxiv. 164 (1803). The plant of Scandinavia and Russia, typical *C. paleacea*, is comparatively low, with culms 1–5 dm. high ("20–50 cm. altus"—*Kükenthal;* "3–5"—*Lindmann;* but, as shown in the Gray Herbarium, sometimes only 1 dm. high); the American plant is more variable, ranging from 0.2–1 m. high. The leaves of European *C. paleacea* are accurately described by Kükenthal as "4–8 mm. lata"; but those of the larger American specimens are often 10–12 mm. broad. The European plant has the pistillate spikes "2–5 cm. longae" (*Kükenthal*); but in ours the length is 2–7 cm. In typical European *C. paleacea* the perigynium has a minute beak, barely 0.2 mm. long; the beak in the American series is distinctly longer, 0.3–0.5 mm. long. The plant of eastern America is, therefore, a well defined geographic variety which I am calling

Carex paleacea Wahlenb., var. **transatlantica**, var. nov., culmis 0.2–1 m. altis; foliis 0.5–1.2 cm. latis; spicis femineis 2–7 cm. longis;

perigyniis valde rostratis, rostro 0.3–0.5 mm. longo.—Coast of Labrador to Massachusetts; shores of James Bay. Type: meadows and swamps in the slaty region, south and east of Bic, Quebec, July 17, 1907, *Fernald & Collins*, no. 930 (in Gray Herb.).

Carex maritima, var. *erectiuscula* Fern. Rhodora, ii. 170 (1900) seems to be a hybrid of *C. paleacea*, var. *transatlantica* and *C. salina*, var. *kattegatensis*. A plant of the shores of the White Sea in Russian Lapland seems well distinguished from typical *C. paleacea* by its browner and erect spikes. This is

C. paleacea, var. **brunnescens** (F. Nylander), comb. nov. *C. maritima*, var. *brunnescens* F. Nylander, Spic. Fl. Fenn. ii. 20 (1844).

Carex Vahlii Schkuhr, var. **inferalpina** (Wahlenb.), comb. nov. *C. alpina*, var. *inferalpina* Wahlenb., Fl. Lapp. 241 (1812); Fernald, Rhodora, xxxv. 223, t. 248, figs. 3, 4, 8 and 9 (1933). *C. angarae* Steud. Syn. Cyp. 190 (1855). *C. alpina*, forma *inferalpina* (Wahlenb.) Kükenthal in Engler, Pflanzenr. iv.[20] 386 (1909).

C. Vahlii, var. **Stevenii** (Holm.), comb. nov. *C. alpina*, var. *Stevenii* Holm, Am. Journ. Sci. ser. 4, xvi. 21, 27 (1903); Fernald, l. c., figs. 5 and 10 (1933).

Unfortunately *Carex alpina* Swartz (1798), which I used in the earlier part of this paper, is invalidated, as Mr. Mackenzie points out to me, by the earlier *C. alpina* Schrank (1789) and another, *C. alpina* Honck. (1792). So far as I can yet determine, the earliest available specific name for our plant is *C. Vahlii* Schkuhr, Riedgr. i. 87, t. Gg. no. 94 (1801).

Habenaria orbiculata (Pursh) Goldie.

The reference to *Habenaria orbiculata* (Pursh) Torr. on p. 240 should read *H. orbiculata* (Pursh) Goldie. The species rests nomenclaturally entirely on *Orchis orbiculata* Pursh. In publishing *H. macrophylla* Goldie, Edinb. Phil. Journ. vi. 331 (1822), its author made the transfer of *Orchis orbiculata* to *Habenaria*, saying of his new *H. macrophylla* "It must rank next to *Habenaria orbiculata* (*Orchis* of Pursh and Nuttall), having, like it, two plane, orbicular, approaching to elliptical, *leaves*, ... and which, in this plant, are four times as large as those of *H. orbiculata*." Even though one may read into this comparison of the leaf-size the influence of Hooker's misidentification of *Orchis orbiculata* Pursh,[1] yet from a purely nomenclatural standpoint *H. orbiculata* rests alone upon the Pursh species, which is the plant we have recently been correctly calling by that name: "In the herbarium at Kew there is a specimen of *Habenaria*

[1] See Ames, Rhodora, viii. 2 (1906).

orbiculata which appears to be the type. On the reverse of the sheet on which it is mounted, in the upper left-hand corner, the name 'Fred Pursh' is written. Presumably, this specimen was obtained by Hooker when the Lambert collection was sold, as Lambert possessed Pursh's herbarium."[1]

EUPHRASIA STRICTA Host (see p. 306). Professor Wiegand kindly calls my attention to the fact that *E. stricta* Host, Fl. Austr. ii. 185 (1831) in antedated by *E. stricta* HBK. Nov. Gen. et Sp. ii. 333 (1818). The removal of the latter species long since from *Euphrasia*, made *E. stricta* Host available and valid under the International Rules until they were fundamentally (and, I believe, unwisely) altered in 1930. Under the present dispensation our plant should probably be called E. RIGIDULA Jord. Pug. Pl. Nov. 134 (1852).

EXPLANATION OF PLATES 232–273.

PLATES 232–238. Sufficiently explained in the legends.

PLATE 239. NANISM AT SEALEVEL IN WESTERN NEWFOUNDLAND: FIG. 1, SOLIDAGO MACROPHYLLA Pursh, var. THYRSOIDEA (E. Meyer) Fern., from Bard Harbor Hill, *Fernald et al.*, no. 29,103; FIG. 2, SENECIO PAUPERCULUS Michx., var. FIRMIFOLIUS Greenm., from Sandy (or Poverty) Cove, *Fernald, Long & Dunbar*, no. 27,164; FIG. 3, SAXIFRAGA OPPOSITIFOLIA L., from Flower Cove, *M. E. Priest;* FIG. 4, SAXIFRAGA CESPITOSA L., from Plum Point, Brig Bay, *Fernald, Long & Dunbar*, no. 26,743; FIG. 5, DRABA INCANA L., var. CONFUSA (Ehrh.) Poir., from Burnt Cape, *Fernald et al.*, no. 28,350; all × 1.

PLATE 240. NANISM AT SEALEVEL IN WESTERN NEWFOUNDLAND: FIG. 1, POTENTILLA FRUTICOSA L., from Port au Port Bay, *Fernald & Wiegand*, no. 3579; FIG. 2, POTENTILLA NIVEA L., var. MACROPHYLLA Ser., from St. John Island, *Fernald et al.*, no. 28,527; FIG. 3, LESQUERELLA PURSHII (Wats.) Fern., from Old Port au Choix, *Fernald, Long & Fogg*, no. 1724; FIG. 4, PLANTAGO JUNCOIDES Lam., var. GLAUCA (Hornem.) Fern., from St. John Island, *Fernald et al.*, no. 29,058; FIG. 5, POA ALPINA L., var. BREVIFOLIA Gaudin, from Savage Cove, *Fernald, Pease & Long*, no. 27,394; all × 1.

PLATE 241. MUHLENBERGIA UNIFLORA (Muhl.) Fern., var. TERRAE-NOVAE Fern.: FIG. 1, habit, × 1, from Grandy Brook, Newfoundland, *Fernald, Long & Fogg*, no. 101; FIG. 2, spikelet from no. 101, × 10. FESTUCA PROLIFERA (Piper) Fern., var. LASIOLEPIS Fern.: FIG. 3, plant, × 1, from TYPE collection, Stanleyville, Newfoundland, *Fernald, Long & Fogg*, no. 1236; FIG. 4, spikelet from TYPE, × 4.

PLATE 242. CATABROSA AQUATICA (L.) Beauv.: FIG. 1, panicle, × 1, from Lund, Sweden, *Nilsson;* FIG. 2. summit of culm, × 6. C. AQUATICA, var. LAURENTIANA Fern.: FIG. 3, panicle, × 1, from Southport, Prince Edward Island, *Fernald & St. John*, no. 6881; FIG. 4, summit of culm, × 6, from Port aux Basques, Newfoundland, *Fernald, Long & Dunbar*, no. 26,285. C. AQUATICA, var. UNIFLORA S. F. Gray: FIG. 5, panicle, × 1, from Valais, Switzerland, *Joad;* FIG. 6, summit of culm, × 6, from Upsala, Sweden, *Ahlberg;* FIG. 7, panicle, × 1, from Henry Lake, Fremont Co., Idaho, *Payson & Payson*, no. 2017; FIG. 8, summit of culm, × 6, from no. 2017.

PLATE 243. AGROPYRON TRACHYCAULUM (Link) Steud.: FIG. 1, inflorescence, × 1, from Fort Garland, Colorado, 1884, *Vasey*, TYPE collection of *A. tenerum* Vasey; FIG. 2, inflorescence, × 1, from Mt. Ste. Anne, Percé, Quebec, *Collins*

[1] Ames, orchidaceae, iv. 144 (1910).

& Fernald, no. 36; FIG. 3, internode of rachilla, × 10, from Rivière à Pierre, Quebec, *Fernald & Smith*, no. 25,465. A. TRACHYCAULUM, var. MAJUS (Vasey) Fern.: FIG. 4, mature (contracted) inflorescence, × 1, from Kearney, Nebraska, *Shear*, no. 272, TOPOTYPE of *A. pseudorepens* Scribn. & Smith; FIG. 5, young inflorescence, × 1, from Little River, Newfoundland, *Mackenzie & Griscom*, no. 11,178; FIG. 6, internodes of rachilla, × 10, from Grand Falls, Newfoundland, *Fernald & Wiegand*, no. 4686. A. TRACHYCAULUM, var. NOVAE-ANGLIAE (Scribn.) Fern.: FIG. 7, young inflorescence, × 1, from the type region, Willoughby Mt., Vermont, *E. F. Williams;* FIG. 8, ripe (contracted) inflorescence, × 1, from Newbury, Massachusetts, *A. A. Eaton;* FIG. 9, internodes of rachilla, × 10, from Willoughby, Vermont, *Eggleston*, no. 2177.

PLATE 244. AGROPYRON TRACHYCAULUM (Link) Steud., var. GLAUCUM (Pease & Moore) Malte: FIG. 1, inflorescence, × 1, from Kelly Point, Pembroke, Maine, *Fernald*, no. 1367, TYPE of the variety; FIG. 2, inflorescence, × 1, from Comox, Vancouver Island, British Columbia, *Malte*, no. 107,855, TYPE of var. *caerulescens* Malte; FIG. 3, inflorescence, × 1, from Victoria, British Columbia, *Malte*, no. 108,309, TYPE of var. *pilosiglume* Malte; FIG. 4, internode of rachilla and base of lemma, × 10, from TYPE. A. TRACHYCAULUM, var. UNILATERALE (Cassidy) Malte: FIG. 5, inflorescence, × 1, from Rivière au Saumon, Anticosti I., Quebec, *Victorin & Rolland*, no. 27,886; FIG. 6, inflorescence, × 1, from Dry Fork of Belt Creek, Montana, *Rydberg*, no. 3352; FIG. 7, internode of rachilla and base of lemma, × 10, from *Victorin & Rolland*, no. 27,886.

PLATE 245. Inflorescences, × 1, of, FIG. 1, AGROPYRON REPENS (L.) Beauv., from Sandy Bay, Quebec, *Fernald & Collins*, no. 385; FIG. 2, A. REPENS, forma ARISTATUM (Schum.) Holmb., from Manchester, Maine, *Scribner*, no. 22; FIG. 3, A. REPENS, var. SUBULATUM (Schreb.) Reichenb., from Shediac Cape, New Brunswick, *Hubbard*, no. 707; FIG. 4, var. SUBULATUM, forma VAILLANTIANUM (Wulf. & Schreb.) Fern., from Jamaica Plain, Massachusetts, *Faxon;* FIG. 5, A. PUNGENS (Pers.) R. & S., from Harwich, Massachusetts, *Fernald*, no. 16,251.

PLATE 246. AGROSTIS SCABRA Willd., var. SEPTENTRIONALIS Fern.: FIG. 1, portion of panicle, × 1, from Main River, Bonne Bay, Newfoundland, *Fernald & Long*, no. 1306; FIG. 2, mature spikelets, × 6, from no. 1306. A. HYEMALIS (Walt.) BSP. (*A. antecedens* Bickn.): FIG. 3, young panicle, × 1, from Telford, Pennsylvania, *Benner;* FIG. 4, expanded panicle, × 1, from Jamaica, Long Island, New York, *Bicknell;* FIG. 5, mature spikelets, × 6, from Wady Petra, Illinois, *V. H. Chase* in Kneucker, Gram. Exsicc. no. 569.

PLATE 247. FIG. 1, CAREX MARITIMA Gunn., var. SETINA (Christ) Fern. (*C. incurva* Lightf., var. *setina* Christ), × 1, from Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 1373. FIG. 2, C. LANGEANA Fern., × 1, from Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 1374.

PLATE 248. CAREX VAHLII Schkuhr (*C. alpina* Sw.): FIG. 1, inflorescence, × 3, from the Engadine, Graubünden, Switzerland, *Zahn*, no. 17; FIG. 6, perigynium of no. 17, × 6; FIG. 2, inflorescence, × 3, from Anse aux Sauvages, Newfoundland, *Fernald, Wiegand & Long*, no. 27,699; FIG. 7, perigynium of same, × 6. C. VAHLII, var. INFERALPINA (Wahlenb.) Fern.: FIG. 3, inflorescence, × 3, from Austria, *Arnell;* FIG. 8, perigynium, of same, × 6; FIG. 4, inflorescence, × 3, from North Fork of Madeleine River, Quebec, *Fernald, Dodge & Smith*, no. 25,549; FIG. 9, perigynium of same, × 6. C. VAHLII, var. STEVENII (Holm) Fern.: FIG. 5, inflorescence, × 3, from Estes Park, Colorado, *Hunnewell;* FIG. 10, perigynium of same, × 6. C. VESICARIA L., var. LAURENTIANA Fern.: FIG. 11, inflorescence, × 1, from Chevalier, Saguenay Co., Quebec, *St. John*, no. 90,279; FIG. 12, inflorescence, × 1, from the TYPE, Doctor Hill, Newfoundland, *Fernald, Long & Fogg*, no. 1474.

PLATE 249. JUNCUS TRIGLUMIS L.: FIG. 1, habit, × 1, from Vajoletthal, Tyrol, *A. S. Pease*, no. 13,386; FIG. 2, fruiting glomerule, × 6, from near Katon-Karagai, Prov. Semiplatinsk, western Siberia, July 29, 1928, *Krylov & Sergievskaja;* FIG. 3, seeds, × 12, from Val de Fain, Haut Engadin, Switzer-

land, August 10, 1868, *Shuttleworth*. J. ALBESCENS (Lange) Fern.: FIG. 4, habit, × 1, from St. John Island, St. John Bay, Newfoundland, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,787; FIG. 5, fruiting glomerule, × 6, from Capstan Point, Flower Cove, Newfoundland, *Fernald, Long & Dunbar*, no. 26,492; FIG. 6, seeds, × 12, from Rock Marsh, Flower Cove, Newfoundland, *Fernald, Long & Dunbar*, no. 26,494.

PLATE 250. CYPRIPEDIUM PARVIFLORUM Salisb., var. PLANIPETALUM Fern.: FIG. 1, large plant, × 1, from Old Port au Choix, Newfoundland, *Fernald, Long & Fogg*, no. 1533; FIG. 2, small plant, × 1, from TYPE collection, Savage Cove, Newfoundland, *Fernald & Long*, no. 27,851.

PLATE 251. HABENARIA STRAMINEA Fern.: FIG. 1, habit, × 1, from Pointe Riche, Newfoundland, *Fernald, Long & Fogg*, no. 1543; FIG. 2, flowers, × 6, from Burnt Cape, Pistolet Bay, Newfoundland, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,889. H. ALBIDA (L.) R. Br.; FIG. 3, flowers, × 6, from Glen Lochay, Killin, Tayside, Perthshire, Scotland, June 25, 1927, *Frank Morris*.

PLATE 252. HABENARIA HOOKERI Torr., var. ABBREVIATA Fern.: habit, × 1, from TYPE collection, Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 1553; flower, × 2, from TYPE (upper insert). H. HOOKERI: flower, × 2, from Wallingford, Vermont, *Kennedy*.

PLATE 253. MALAXIS BRACHYPODA (Gray) Fern.: FIG. 1, habit, × 1, from Rock Marsh, Flower Cove, Newfoundland, *Fernald, Pease & Long*, no. 27,927; FIG. 2, flowers, showing drooping lip, × 4, from the type region, Cedar Lake, Herkimer Co., New York, *J. V. Haberer*, no. 893; FIG. 3, fruit, showing reflexed perianth, × 4, from Mars Hill, Maine, September 8, 1896, *Fernald;* FIG. 4, buds, just before expansion, × 4, from Rivière aux Marsouins, Quebec, *Fernald & Weatherby*, no. 2429. M. MONOPHYLLOS (L.) Sw.: FIG. 5, flowers, showing erect lip, × 4, from Kloster-Schwaderloch, Switzerland, *Zoja* in *Braun-Blanquet*, Fl. Raet. Exsicc., no. 123; FIG. 6, fruit, with shriveled perianth projected forward, × 4, from St. Petersburg, Russia, *Herb. Fl. Ingricae*, no. 627; buds, just before expansion, × 4, from Graswangthal, Bavaria, *F. Schultz*, Herb. Norm., no. 950.

PLATE 254. SALIX WIEGANDII Fern., × 1: FIG. 1, mature branchlet, from Pointe Riche, Newfoundland, *Fernald, Long & Fogg*, no. 1605; FIGS. 2 and 3, flowering (pistillate) branchlets from the TYPE collection, Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 1602.

PLATE 255. ARENARIA MARCESCENS Fern.: FIG. 1, fragments, in flower, × 1, from Mt. Albert, Quebec, *Fernald, Griscom, Mackenzie & Smith*, no. 25,725; FIG. 2, fragment, in fruit, × 1, from the TYPE, Blomidon, Newfoundland, *Fernald & Wiegand*, no. 3365; FIG. 3, seeds, × 10, from the TYPE, no. 3365.

PLATE 256. ARENARIA NORVEGICA Gunn.: FIG. 1, entire plant, × 1, from Lake Torneträsk, Torne Lappmark, *Alm*, Intern. Phytogeogr. Exc., no. 3897: FIG. 2, seeds, × 10, from Hjerkinn, Norway, *A. S. Pease*, no. 20,773. A. CYLINDROCARPA Fern.: FIG. 3, fragments in young fruit, × 1, from The Tableland, Bonne Bay, Newfoundland, *Fernald, Long & Fogg*, no. 1675; FIG. 4, flower, to show expanded calyx, × 6, from Mt. Albert, Quebec, *Fernald, Griscom, Mackenzie & Smith*, no. 25,730; FIG. 5, mature capsule and calyx, × 6, from St. John Island, Newfoundland, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,180; FIG. 6, seeds, × 10, from no. 28,180.

PLATE 257. CERASTIUM TERRAE-NOVAE Fern. & Wieg.: FIG. 1, small plants, × 1, from The Tableland, Bonne Bay, Newfoundland, *Fernald, Long & Fogg*, no. 1685; FIG. 2, seeds, showing one with ruptured testa, × 10, from the TYPE, Blomidon, Newfoundland, *Fernald & Wiegand*, no. 3390.

PLATE 258. LESQUERELLA ARCTICA (Wormsk.) Wats.: FIG. 1, small plant, × 1, from Sewell Harbor, lat. 78° 30′, western Greenland, *Ralph Robinson*, no. 38; FIG. 2, fruit, × 1, from Nûgssuaq Halvø, Pâtût, lat. 70° 15′, western Greenland, July 3, 1929, *M. P. & R. T. Porsild;* FIG. 3, flower (shriveled), showing lance-acuminate sepals, × 4, from Ritenbenks Kulbrud, lat. 70° 3′, Disco, Greenland, June 4, 1924, *A. E. Porsild*. L. PURSHII (Wats.) Fern.:

FIG. 4, small plant, × 1, from Big Brook, Straits of Belle Isle, Newfoundland, *Long & Gilbert*, no. 28,335; FIG. 5, fruit, × 1, from Green Gardens, Cape St. George, Newfoundland, *Mackenzie & Griscom*, no. 11,016; FIG. 6, flower, showing oblong, obtuse sepals, × 4, from Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 1725.

PLATE 259. EPILOBIUM PYLAIEANUM Fern.: FIGS. 1, 2 and 3, fruiting and flowering plants, × 1, from Burgeo, Newfoundland, *Fernald, Long & Fogg*, no. 332; FIG. 4, flower, showing oblong, obtuse calyx-lobes, × 6, from no. 332; FIG. 5, seed, showing slender beak, × 10, from the TYPE, Port aux Basques, Newfoundland, *Fernald, Long & Dunbar*, no. 26,865.

PLATE 260. VACCINIUM NUBIGENUM Fern.: flowering branch, × 1, from Deep Gulch, Doctor Hill, Newfoundland, *Fernald, Long & Fogg*, no. 1936; FIG. 2, margin of leaf, × 4, from no. 1936; FIG. 3, flower, × 4, from no. 1936; FIG. 4, anthers, × 8, from no. 1936. V. CESPITOSUM Michx.: anthers, × 8, from Flower Cove, Newfoundland, *Pease, Long & Gilbert*, no. 28,868. V. OVALIFOLIUM Sm.: anthers, × 8, from Mt. Hood, Oregon, *Henderson*, no. 744.

PLATE 261. ASTER TRADESCANTI L., × ⅔: type of species in Clifford Herbarium, British Museum, with designation of Asa Gray, "vera" (photographed by *M. L. Fernald*, September, 1903).

PLATE 262. ASTER TRADESCANTI L., × ½: upper three-fourths of sheet from Sandy Cove, Digby Co., Nova Scotia, *Fernald & Long*, no. 22,762, identified (correctly) by Wiegand as *A. saxatilis* (Fern.) Blanchard.

PLATE 263. ANTENNARIA COLUMNARIS Fern., × 1, from the TYPE collection, Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 2076; insert, × 2, to show tips of crowded cauline leaves.

PLATE 264. ANTENNARIA FOGGII Fern., × 1, from TYPE collection, Old Port au Choix, Newfoundland, *Fernald, Long & Fogg*, no. 2100; insert, × 2, to display leaf-tips and coherent bracts.

PLATE 265. ANTENNARIA BAYARDI Fern., × 1, from TYPE collection, Tucker's Head, Bonne Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2097; insert, × 2, to show leaf-tips and loose bracts.

PLATE 266. ANTENNARIA BRUNNESCENS Fern., × 1, from TYPE collection, alt. 650 m., Killdevil, Bonne Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2105; insert, × 2, to show leaf-tips and broad bracts.

PLATE 267. ANTENNARIA CANA (Fern. & Wieg.) Fern., × 1, plant at left from type station of species, Pointe Riche, Newfoundland, *Fernald, Long & Fogg*, no. 2087; plant at right from TYPE collection of *A. Longii* Fern., Schooner (or Brandy) Island, Pistolet Bay, Newfoundland, *Pease & Long*, no. 29,177; inserts, × 2, from collections shown below, to display leaf-tips and loose involucres.

PLATE 268. ANTENNARIA CONFUSA Fern. (left), × 1, from TYPE collection, Old Port au Choix, Newfoundland, *Fernald, Long & Fogg*, no. 2078; insert × 2. A. GASPENSIS Fern. (right), × 1, from Penguin Head, Bay of Islands, Newfoundland, *Fernald, Long & Fogg*, no. 2107; insert, × 2.

PLATE 269. ARNICA CHIONOPAPPA Fern.: FIG. 1, small plant, to show characteristic 3-nerved basal leaves, × 1, from Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2136; FIG. 2, achene and disk-corolla, × 6, from Shag Cliff, Bonne Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2137. A. TOMENTOSA J. M. Macoun: FIGS. 3 and 4, small plants, × 1, from Old Port au Choix, Newfoundland, *Fernald, Long & Fogg*, no. 2127; FIG. 5, achene and disk-corolla, × 6, from no. 2127.

PLATE 270. ARNICA LOUISEANA Farr: FIG. 1, small plant, × 1, from Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2140; FIG. 2, achene and disk-corolla, × 6, from Pointe Riche, Newfoundland, *Fernald, Long & Fogg*, no. 2143. A. TERRAE-NOVAE Fern.: FIG. 3, small plants, × 1, from Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2124; FIG. 4, achene and disk-corolla, × 6, from Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 2126.

PLATE 271. TARAXACUM CERATOPHORUM (Led.) DC.: FIGS. 1 and 2, small plant and individual head, to show characteristic involucre, × 1, from Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 7172; FIG. 3, achene with beak and pappus, × 1, from no. 7172; FIG. 4, achene, × 10, from no. 7172. T. AMBIGENS Fern.: FIG. 5, small leaf, × 1, from the TYPE, Port au Choix, *Fernald, Long & Fogg*, no. 2167; FIG. 6, head, with characteristic reflexing outer bracts, × 1, from the TYPE; FIG. 7, achene with beak and pappus, × 1, from the TYPE; FIG. 8, achene, × 10, from the TYPE. T. AMBIGENS, var. FULTIUS Fern.: FIG. 9, head, showing appressed outer involucre, × 1, from the TYPE, Gargamelle Cove, Newfoundland, *Fernald, Long & Fogg*, no. 2163. T. LAPPONICUM Kihlm.: FIG. 10, characteristic achene, × 10, from Sandy (Poverty) Cove, Straits of Belle Isle, Newfoundland, *Fernald, Long & Dunbar*, no. 27,174.

PLATE 272. TARAXACUM PHYMATOCARPUM Vahl.: FIG. 1, plant, × 1, from Sewall Harbor, lat. 78° 30′, western Greenland, *Ralph Robinson*, no. 40; FIG. 2, achene (dark) with characteristic short beak, × 1, from Netiuleme, Whale Sound, Greenland, *Wetherell*, no. 175, in part; FIG. 3, achene, × 10, from no. 175. T. LYRATUM (Led.) DC.: FIG. 4, achene, × 10, from high alpine region, Colorado, *Hall & Harbour*. T. LAURENTIANUM Fern.: FIG. 5, leaf, × 1, from the TYPE, base of Ha-Ha Mountain, Ha-Ha Bay, Newfoundland, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,245; FIGS. 6 and 7, heads, showing characteristic involucre, × 1, from the TYPE; FIG. 8, achene, with the long beak and long pappus, × 1, from the TYPE; FIG. 9, achene, × 10, from the TYPE. T. DUMETORUM Greene: FIG. 10, achene, × 10, from Medicine Hat, Alberta, June 8, 1894, *John Macoun*.

PLATE 273. TARAXACUM LONGII Fern.: FIG. 1, leaf, × 1, from Grand River, Gaspé Co., Quebec, June 30–July 3, 1904, *Fernald;* FIG. 2, head, showing characteristic involucre, × 1, from the TYPE, base of Ha-Ha Mountain, Ha-Ha Bay, Newfoundland, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,244; FIG. 3, achene, with beak and pappus, × 1, from TYPE; FIG. 4, achene, × 10, from TYPE. T. LATILOBUM DC.: FIG. 5, achene, × 10, from Old Port au Choix, Newfoundland, *Fernald, Long & Fogg*, no. 2159. T. TORNGATENSE Fern.: FIG. 6, leaf, × 1, from the TYPE, Head of Nachvak Bay, Labrador, *Woodworth*, no. 443; FIG. 7, head from TYPE; FIG. 8, achene, with comparatively short beak, and pappus, × 1, from TYPE; FIG. 9, achene, × 10, from TYPE.

BRANCHING POLYGONATUM PUBESCENS

M. L. FERNALD AND S. K. HARRIS

ON May 21, 1933, while returning from a field-trip in Vermont with a class of Radcliffe students, we stopped in the wooded area of Ashby in northern Middlesex County, Massachusetts to examine some shrubs which had caused discussion. Stepping from the automobile to the edge of the recently surfaced road we were surprised to find ourselves in a colony of liliaceous plants which, at first, were unrecognized. Examination showed that these were an aberrant form of the common Solomon's Seal of northeastern America, *Polygonatum pubescens* (Willd.) Pursh, with elongate, spreading or ascending leafy branches replacing the ordinary naked drooping peduncles. So far as we can

find, no such form has been described in America, though in Europe similar forms of *P. multiflorum* (L). All. have been found at several stations since the first of them was noted in Switzerland prior to 1826.

The first discovered of these European plants was treated as a species, *Convallaria bracteata* Thomas (without diagnosis) in Steudel & Hochstetter, Enum. Pl. Germ. Helv. Prodr. 50 (1826), and (with full description) in Gaudin, Fl. Helv. ii. 531 (1828), but on the preceding page of the latter work it was treated doubtfully as a variety, *C. multiflora*, ? γ. *bracteata* Gaud. l. c. 530 (1828), based in part (as to name) upon *C. bracteata* of the next page. This plant, as represented in the Gray Herbarium by a sheet of Thomas' original material from Bex, another collected by Alexander Braun in Baden and by the illustration in Reichenbach's Icones (x. t. ccccxxxiii. fig. 963), has the inflorescences no longer than in ordinary *P. multiflorum* but it differs in having leafy bracts on the pedicels. It was transferred to *Polygonatum* as *P. multiflorum*, γ. *bracteatum* (Thomas) Kunth, Enum. v. 139 (1850).

Another form of *Polygonatum multiflorum* is more comparable with our plant, having the branches elongate and with larger leaves. This was described from Baden as *Convallaria multiflora*, γ. *ramosa* Doell, Fl. Baden, i. 384 (1857) and later transferred to *Polygonatum* as *P. multiflorum*, var. *ramosum* (Doell) Geisenheymer, Deutsche Bot. Monatsschr. xi. 35 (1893).

All these variations appear to be forms rather than true geographic varieties and as such should be called

Polygonatum multiflorum (L.) All., forma **bracteatum** (Thomas), comb. nov. *Convallaria bracteata* Thomas in Steud. & Hochst. Enum. Pl. Germ. Helv. Prodr. 50 (1826), name only, and in Gaud. Fl. Helv. ii. 531 (1828). *C. multiflora*, ? γ. *bracteata* (Thomas) Gaudin, l. c. 530 (1828) at least as to syn. *C. bracteata*. *P. multiflorum*, γ. *bracteatum* (Thomas) Kunth, Enum. v. 139 (1850).

P. multiflorum, forma **ramosum** (Doell), comb. nov. *Convallaria multiflora*, γ. *ramosa* Doell, Fl. Baden, i. 384 (1857). *P. multiflorum*, var. *ramosum* (Doell) Geisenh. Deutsche Bot. Monatsschr. xi. 35 (1893).

P. pubescens (Willd.) Pursh, forma **fultius**, forma nov. (fig. 1), pedunculis axillaribus in ramos elongatos adscendentes foliosos mutatis; ramis imis foliis subtendentibus aequantibus vel superantibus, floribus 1–3 subsessilibus in axillis foliorum ramorum.—Massachusetts: roadside at border of dry woods, Ashby, May 21, 1933, *Fernald & Harris*, no. 2590 (type in Gray Herb., isotype in herb. New England Bot. Club).

Polygonatum pubescens, forma *fultius* occurred in some quantity (about 20 plants) at the margin of a recently remade road; farther back, in undisturbed woods, the abundant *P. pubescens* was quite typical, in having naked, pendulous, simple or forking peduncles. The inference is at least reasonable that the mishap of road-improvement, occurring at the border of a colony of *P. pubescens*, induced the mutation or sporting of the plants most disturbed.[1] Five living

Fig. 1. POLYGONATUM PUBESCENS, forma FULTIUS, × ¼.

plants transferred to the shrubbery of the senior author have grown all summer but, although they flowered freely and held their marcescent perianths for some weeks, they utterly failed to set fruit. For a photograph (FIG. 1) of one of these plants, × ¼, we are indebted to

[1] Such results of injury are often noted. The following, of recent date, is to the point: "OSMUNDA CINNAMOMEA f. FRONDOSA (T. & G.) Britton. . . . Several plants in a small colony with the wet soil around the plants more or less covered with hardened road tar from highway construction close by. Normal spore-bearing fronds were entirely absent, every frond being fertile at the tip only, ... Since abnormal forms are often associated with certain types of injury or unnatural conditions the presence of the road tar is possibly to be associated with the development of these spore-bearing leafy fronds."—H. D. House, Am. Fern Journ. xxiii. 4, 5 (1933).

Mr. Henry G. Fernald. Other plants given to Dr. Edgar Anderson to grow were not allowed to attempt fruiting.

It is not improbable that *Polygonatum pubescens*, forma *fultius* is a sterile or vegetative mutant. At least, the infertility of its European counterparts has been noted, Geisenheymer specially stating of them: "alle Blüten sind unfruchtbar. In der sehr langen und dünnen Perigonröhre ist keine Spur eines Fruchtknotens zu finden."

Gray Herbarium.

Vol. 35, no. 419, including pages 351 to 386 and plates 269 to 273, was issued 3 November, 1933.

ERRATA

Page 1, line 9; *for* 271 *read* 273.
" 52, line 5; *for* de Pylaie *read* de la Pylaie.
" 66, line 14; *for* Staph *read* Stapf.
" 99, line 25; *for* problen *read* problem.
" 166, line 19; *for* L'Aigle *read* l'Aigle.
" 186, last line; *for* *March* read *April*.
" 201, line 11; *for* Alka-kengi *read* Alkekengi.
" 208, line 8; *for* 1, 2 and *a read* 3, 4 and 5.
" 208, line 14; *for* 1 and 2 *read* 3 and 4.
" 208, line 19; *for* *a read* 5.
" 209, line 30; *for* 3 and *b read* 1 and 2.
" 215, line 26; *for* (Torr.) Hitchc. *read* of Nfd. records.
No. 414, table of contents; *for* 223 *read* 224.
Page 224, lines 2 and 4 from bottom; *for* Neomammallaria *read* Neomammillaria.
" 230, line 31; omit *C.* before *Hostiana*.
" 231, line 13; *omit* period *after* Junge.
" 258, line 12; *for* 1851 *read* 1857.
" 307, line 7, *for* other's *read* others'.
" 314, line 3; *omit* first parenthesis.
Plate 271, opp. page 368, in explanation of plate, line 6; *for* fultior *read* fultius.
Page 376, line 30; *for* fultior *read* fultius.

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